KATHOLIEKE UNIVERSITEIT
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Faculty of Business and Economics

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René Belderbos, Woody van Olffen and Jianglei Zou

DEPARTMENT OF MANAGERIAL ECONOMICS, STRATEGY AND INNOVATION (MSI)

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René Belderbos
Katholieke Universiteit Leuven
Faculty of Business and Economics
Department of Managerial Economics, Strategy and Innovation
Naamsestraat 69, B-3000 Leuven, Belgium
Phone + 32 16 326912
Email: Rene.belderbos@econ.kuleuven.be

Woody van Olffen
Rotterdam School of Management/ Erasmus University
Department of Strategic Management and Business Environment
PO Box 1738, 3000 DR Rotterdam, The Netherlands
Phone +31 10 4082533
Email: wolffen@rsm.nl

Jianglei Zou
Fortis Bank
Brussels, Belgium
Email: Jianglei.zou@fortis .be

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* Author names appear alphabetically.

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ABSTRACT

We combine economic and institutional theories of clustering in foreign entry location choice in an overarching social learning conceptualisation. Prospective entrants learn about the attractiveness of alternative locations by observing the entry choices of previous investors ('models'). We distinguish two types of learning which differ in observational focus width but can and do operate simultaneously. With *assessment learning*, firms judge the economic feasibility and agglomeration benefits of entering a location by observing and following a broad set of models. With *bandwagon learning*, firm-level uncertainty narrows attention to, and prompts the following of, specific models, with recentness of model behavior an important moderator. We find broad support for our conceptualization in an analysis of 692 Japanese electronics firms' entries into Chinese provinces during 1979-2001.

INTRODUCTION

A major force in the globalization process is the internationalization of manufacturing operations. As firms attempt to survive in highly competitive markets, they seek out production locations that provide access to attractive local resources. These individual rent-seeking location processes have led to co-location among firms, resulting in strong national and regional clusters of manufacturing establishments. Prior studies on co-location and clustering have primarily been rooted in two quite isolated study domains and research traditions, in particular in regional and industrial economics on the one hand and organizational and institutional (learning) theory on the other. Studies in the domain of regional and international economics (e.g.; Smith and Florida 1994; Head et al. 1995, Head and Ries, 1996; Belderbos and Carree, 2002; Chang and Park, 2005; Alcacer and Chung, 2007) suggest that spatial clustering results from positive externalities to new entrants. A second group of studies emphasizes that clustering occurs because firms mimic other firms' foreign entry behavior. Such organisational mimicry may be due to information spillovers between incumbents and potential entrants in a process of observational (vicarious) learning (Banerjee, 1992; Baum et al. 2000; Tan et al, 2008). If firms cannot perfectly observe and analyze all relevant environmental factors and are uncertain as to the comparative advantages of alternative locations, they may instead derive relevant information from observing prior entry location choices by other firms. The neo-institutional perspective on locational mimicry (e.g., Henisz and Delios, 2001; Guillen, 2002; Chan et al, 2006; Li et al, 2007) emphasizes the legitimizing effect that previous entries in a location may have under uncertainty. As locating somewhere gains recognition as being 'rational' or 'right', other firms are more

likely to follow, in particular if firms belong to the same institutional group and share a group identity.[1]

To date, combination and integration of insights of these theories of clustering have been limited as they do not share a common language and research paradigm. In this paper we attempt to bridge these differences in order to make a twofold contribution. First, we integrate existing theories in a single overarching conceptual framework to foster theoretical richness, integration and parsimony. Second, while previous studies have tended to emphasize either one of the perspectives,[2] the purpose of the current paper is to explicitly juxtapose, rather than oppose, these perspectives and to disentangle the different explanations of clustering by deriving contingencies to their respective influence. We therefore model their *simultaneous* operation and empirically test for the theoretically derived contingencies to examine their associated relative explanatory power.

Our conceptual framework builds on the closest conceptual 'common ground' between the two explanations. This common ground is found by viewing clustering in location choice as two manifestations of a *social modelling process* whereby undecided actors learn from the exemplary actions provided by a heterogeneous set of other relevant economic actors. We examine the working of two simultaneous social learning mechanisms in a comprehensive dataset on the location of 692 Japanese electronics firms' manufacturing entries into China's provinces, from the opening of the country to foreign investors in 1979 until 2001. Below we develop our hypotheses in more detail and present the results and a discussion of our analysis.

[1] An additional perspective on inter-organizational influences on investments abroad holds that firms engaged in competitive rivalry follow each others' foreign market entry strategies in order to minimize the risk that rivals' investments have a negative impact on the firm's competitive position at home and in other international markets (e.g. Head et al., 2002; Gimeno et al., 2005; Lieberman and Asaba, 2006). Since this explanation is relevant for foreign market entry decisions rather than clustering of investments conditional on market entry (the approach in our research), we do not specifically focus on the rivalry factor here.

[2] Exceptions are Gimeno et al (2005) and Delios et al. (2008). The focus of these studies is on distinguishing between competitive interaction in home markets and non-competitive mimetic behavior in foreign market entry decisions.

THEORETICAL PERSPECTIVES ON LOCATION CHOICE

From a technical-economic viewpoint, the dominant economic theory of clustering in location-choice has been agglomeration theory. According to this theory, firms can increase profitability by locating in the vicinity of other economic activities and related production facilities, due to positive spillovers among these agglomerated firms (Marshall, 1922; Rosenbloom, 1990; Krugman, 1991). These benefits of co-location can take the form of, for instance, infrastructure quality, available pools of skilled labor and the presence of specialized suppliers and important service providers. Previous studies on location by multinational firms have shown that agglomeration concerns indeed weigh heavily in such choices (Wheeler and Mody, 1992; Head et al, 1995; Head and Ries, 1996; Delios et al., 2000; Shaver and Flyer, 2000; Belderbos and Carree, 2002; Chang and Park, 2005; Alcacer and Chung, 2007; Alcacer, 2007). Firms are attracted to a certain location because of an existing mass of relevant industrial activity, typically captured by variables such as the total number of previous foreign investors in a location in the same or related industries.

Other theories of clustering in location choice do not focus on a direct assessment of the 'objective' attractiveness potentially resulting from the presence of others. Instead, co-location is seen as an individual entrants' response to uncertainty. Under uncertainty, potential entrants look at relevant, knowledgeable others for information. Decision makers then combine private information with information inferred from the actions of others in order to arrive at a decision. In the *informational spillover explanation*, firms follow the behavior of earlier investors to economize on search cost and reduce the uncertainty surrounding decision making (Cyert and March, 1963; Shaver et al., 1997; Gimeno et al. 2005). This process of following has been dubbed 'rational herding' or 'bandwagoning' elsewhere (Banerjee, 1992; Bikhchandani et al. 1992; Abrahamson and Rosenkopf, 1993), and we will borrow the latter term in the present context. Firms carefully observe only those

models they consider as relevant comparisons for their own entry location choice situation and derive informational value from them.

Finally, *neo-institutional theory* (Meyer and Rowan, 1977; DiMaggio and Powell, 1983) holds that information derived from other organizations' behavior is always ambiguous such that firms rely on reputations or status of exemplary firms in order to gain legitimacy within their reference group. Firms tend to follow institutional rules prevalent in the same social group and mimic actions of other firms in their group environment (Meyer and Scott, 1983). Such rule-following imitative behavior has been found to play an important role in a range of organizational phenomena such as strategic diversification (Haveman, 1993), radical organizational change (D'Aunno et al., 2000) and the entry into new geographic markets (Guillén, 2002; Tan et al, 2008; Li et al, 2007).

When considered jointly, the various theoretical approaches to clustering in location choice share an important feature. They all conceive of locating as a process that is -at least in part- driven by *social* information provided by the examples that others set.[3] Firms appear to take careful notice of the actions and examples of the wider relevant economic community when deciding on locations. Thus, decision making on location bears features of a *social learning* or *social modelling* process, where focal firms learn from the economic (location) behavior of others (Cyert and March, 1963). These environmental exemplars can be called 'models' (DiMaggio and Powell, 1983). Each location-choice theory just described involves learning from predecessors' (i.e., models') actions, but there are crucial differences in the *nature* of the models being observed and followed. In agglomeration-theory, learning focuses on observing an existing heterogeneous set of relevant economic establishments in an area, whereas in the other two theories learning focuses on the choices of a much narrower band of similar exemplars (informational spillovers) or on the legitimizing actions of some highly

[3] We note that several non-social factors can and will play a role in determining location choice as well. These include province variations related to support policies, economic development and market size, and manufacturing costs. We take such variations into account later on in our empirical set-up.

respected firms and/ or firms in the same institutional group. It is important to stress, that these different observational processes and the information the decision maker draws from them are likely to operate simultaneously and may each contribute to the decision process. An analogy may help to illuminate the distinction between these theoretical explanations. When contemplating what place to visit for a good night out, a person may follow a number of observational leads. A restaurant location that is often seen to have a large number of guests, which provides an enjoyable and lively atmosphere, signals the general attractiveness of the place (agglomeration effects). This signal may be supplemented with more specific information that the person's friends or family with similar tastes are known to go there (information spillovers). Finally, and in addition, the person may be sensitive to knowing that many respected members of his profession like to be seen there (legitimizing action).

We propose to consider these three explanations of behavioral clustering as emanating from two parallel perspectives on social learning from an exemplary heterogeneous mass of predecessors. These perspectives differ in their focus of attention, being either wide or narrow. From the *assessment learning perspective* firms contemplating a location will consider the rationality of a choice by observing the existing agglomeration as a whole and learn from that. From the *bandwagon learning perspective,* the various decisions of more *specific* model firms serve as behavioral exemplars. These two types of social learning can, and usually will, function simultaneously. The social learning 'lens' therefore combines hitherto separate explanations of isomorphic organizational action from different strands of literature. The juxtapositioning of the two types of learning in one framework has the advantage of being both parsimonious and integrative. It is parsimonious because it uses a single theoretical concept- that of social learning- to understand co-location from two hitherto separately treated parallel mechanisms (i.e., agglomeration and bandwagoning). It is

integrative as it allows declaring clear contingencies for the operation and relative explanatory power of either mechanism.

For clarity of exposition, Table 1 provides a summary of the conceptual distinctions between assessment and bandwagon learning. Note that the learning mechanisms are juxtaposed rather than opposed and tend to operate simultaneously, because they stem from different *perspectives* taken when observing previous model behavior (as in the restaurant choice analogy above). Firms typically take clues both from the general movement of models *and* from different, more specific subsets of models.

Insert Table 1 about here

We now proceed with a more detailed look at location choice under each learning mechanism.

Assessment Learning

In the assessment mechanism of social learning, firms make a general assessment of the feasibility of locating in a particular area based on existing economic activity. Imitation in this mechanism is frequency-based (Haunschild and Miner, 1997). Thus, a broad range of firms function as a model, as long as they contribute to agglomeration externalities. The sheer presence of others signals the level of general economic embeddedness that a firm may expect upon locating there: models give an example by 'being there'. The information that potential entrants derive from these models is of a general and cumulative nature. Following the models' example by clustering with them is expected to generate positive spillovers on profitability, feasibility and sustainability of the firms' foreign expansion, which are known as "agglomeration benefits" (e.g. Rosenbloom, 1990; Head et al, 1995). These benefits are

predominantly related to clustering of firms within the same industry (e.g. Head et al. 1995; Henisz and Delios, 2001: Belderbos and Carree, 2002; Chang and Park, 2005). The larger the existing concentration of these models, the stronger the potential agglomeration benefits and the stronger the attraction on new firms to the region. Therefore, with assessment learning, firms will favour a location with the largest total number of generic model establishments. It is the cumulative mass of previous entries that counts.

Hypothesis 1a: (Assessment Learning) The larger the total number of previous entries in a region by model firms, the greater the odds of a firm choosing that region.

Although the positive impact of foreign agglomeration on location choice of firms has been supported by earlier findings, previous studies of the effects of agglomeration on firm performance have generally not been able to confirm an expected positive impact (e.g. Baum and Mezias, 1992; Appold, 1995; Chung, 2001; Chung and Kalnins; 2001). This has been attributed to the greater competition between firms in agglomerated areas to attract customers or to secure quality inputs (e.g. skilled labor), leading to increased price competition and higher input costs (Haveman, 1993; Chung and Kalnins, 2001; Sorenson and Audia, 2002; Chang and Park, 2005; Miller and Eden, 2006). This 'competition effect' discourages further co-locating at higher levels of foreign agglomeration as the marginal return of co-locating declines and may eventually become negative. We therefore qualify our first hypothesis by specifying a curvilinear (inverted-U shaped) impact of foreign agglomeration on the odds of locating.

Hypothesis 1b: At higher total entry counts, the marginal impact of the total number of entries on region choice declines and eventually becomes negative.

Bandwagon Learning

The bandwagon mechanism of social learning emanates from firm-level uncertainty. As neo-institutional scholars (DiMaggio and Powell, 1983; Haveman, 1993) have argued, organizations under uncertainty mimic the behavior of specific reference groups in their institutional environment. That is to say, the bandwagon mechanism implies firms being selective in whom they will follow. Mimicry is trait-based (to borrow a term of Haunschild and Miner, 1997) as it prompts firms to follow, for instance, large firms over small firms (Gilbert and Lieberman, 1987), similar over dissimilar firms (Baum, Li and Usher, 2000), or high status over low status models (Burns and Wholey, 1993; Rao, Greve and Davis, 2001). As a result, bandwagon learning is of a more sophisticated nature than assessment learning in which one essentially 'follows the crowd'. Instead, with bandwagon learning, firms observe models (i.e., other firms) that provide an example of the focal behavioral act ("locating somewhere") and thereby give specific information about the relative attractiveness or the legitimacy of a certain behavioral option. However, because not all examples are equally relevant, firms will be sensitive to the characteristics of the models as these inform them of the relative applicability of the models' behavior for their own decisions. As bandwagon imitation can be based upon informational and institutional considerations (Abrahamson and Rosenkopf, 1993), firms are expected to follow models with strong *informational* and/ or *legitimizing* value.

In *informational bandwagons,* models are selected and followed that provide the strongest informational value (Bikhchandani et al, 1992), which is potentially highest for models that are similar to the focal firm. As similarity is an important driver of cognitive categorization of the environment (Porac and Thomas, 1990), similar firms are likely to become important referents for action, attracting a great deal of attention (Scott, 1992). If the

bandwagon is of an *institutional* nature, models that lend legitimacy to the firm and its behavior are observed and followed. It is created by following the actions of models whose actions serve as referents of socially appropriate firm behavior. Many institutional studies have shown that various forms of tightly-knit networks of firms can be a source of normative, coercive or mimetic pressures to conform (DiMaggio and Powell, 1983). As members frequently interact within a limited group they become aware of, and compare, their actions with, network partners, creating isomorphic tendencies as they strive for legitimacy within those groups. These networks can be created in various ways, for instance through interlocking directorships (Haunschild, 1993; Davis and Greve, 1997), acquaintanceship (Galaskiewicz and Wasserman, 1989), personal board contacts (Palmer, Jennings and Zhou, 1993) or -at a country level- trade ties (Guler, Guillén and Muir McPherson, 2002). They can exert an isomorphic influence on a host of operational and strategic decisions in firms, ranging from anti-takeover measures (Davis, 1991) to technological innovations (Ahuja, 2000) and foreign entry decisions (e.g. Guillen, 2002; Hensiz and Delios, 2001).

Finally, the legitimacy of particular location choices may also be created by the previous actions of highly visible or admired and prestigious firms. Institutional theory suggests that firms seek legitimacy by imitating the actions of these high status firms (Di Maggio and Powell, 1983). When high status firms locate in a certain area, this lends locating in the region an image of rationality and appropriateness, which other firms are likely to follow in order to gain legitimacy in the eyes of their stakeholders. It is not that the high status necessarily 'rubs off' on imitators –although this may be a motive (Lieberman and Asaba, 2006)- but that behaving isomorphic with a high status firm helps to mobilize valuable real and symbolic resources (i.e. investor capital, tolerance, approval, respect) toward the imitating firm (Meyer and Rowan, 1977, 1983). Several studies (e.g.,

Galaskiewicz and Wasserman, 1989; Burns and Wholey, 1993; Han, 1994) have corroborated the attractiveness of high status or prestigious organizations as objects of imitation.

We note that the distinction between informational and legitimizing value driving bandwagon behavior is often not clear-cut. While prior behavior of high status firms has legitimizing value as it is seen as appropriate behavior, one of the reasons why it seen as appropriate may be that these high status firms have proven to take value-enhancing decisions in the past. Hence, followers may also weigh the informational clues derived from high status firm behavior. Similarly, frequent inter-firm interactions within institutional groups may also facilitate communication of foreign investment experiences and the underlying advantages of specific foreign locations, such that informational clues are mingled with legitimizing value. In the approach taken in this paper, we examine the role of these types of specific bandwagon models without drawing inferences on the precise relevance of informational and legitimizing value embedded in bandwagon model behavior.

Summarizing, our expectations regarding bandwagon learning relate to a positive impact of prior entry by specific sets of models, i.e., those that are similar in characteristics, similar in terms of institutional group membership, or perceived to be high in status and prestige. This expectation is summarized in hypothesis 2:

Hypothesis 2: *(Bandwagon learning) The larger the number of previous entries in a region by specific model firms –firms that are similar to the investing firm, that belong to the same institutional group, or that are perceived as high status– the greater the odds of a firm choosing that region.*

Agglomeration and Bandwagon Learning contingencies: Uncertainty and Recentness

In order to distinguish assessment from bandwagon mechanisms, we have so far examined differences in the objects, i.e. differences in the *types* of models being followed under either mechanism. However, there is good reason to expect differences in the conditions under which the role of bandwagon learning in location choice will gain or lose importance relative to assessment learning. In particular, the impact of model behavior on uncertainty reduction is likely to be a function of the recentness of the model's actions. Furthermore, as bandwagon following originates from decision uncertainty, one would expect it to be affected more strongly under conditions of uncertainty. This effect is not expected to play a major role in assessment learning as agglomeration benefits are not uncertainty-driven but stem from local externalities. The lower part of Table 1 summarizes these differences. The associated arguments are developed below.

The search for effective solutions naturally begins with the most *recently* used ones (Cyert and March, 1963). Moreover, especially when circumstances are changing, recent action information is expected to have a premium for all followers as it has a stronger potential to reduce uncertainty *now*. These 'recentness principles' were shown to hold for learning both within and between organizations. In intra-organizational learning studies, recent experience has often been found to have a stronger bearing on current behavior than experience from the more distant past. For instance, Argote, Beckman and Epple (1990) showed that in the shipbuilding industry recent experience was a more important predictor of current production than cumulative output. Similarly, Sampson (2005) found that only recent (that is: not cumulative) R&D alliance experience has a positive impact on collaborative returns. Part of this has to do with forgetting and cognitive limitations (Argote, 1999), but another important part relates to the declining perceived *relevance* of the past for the present, especially when circumstances change over time. When it comes to imitation between organizations in the context of location decisions, recentness of previous model behavior is

an important theoretical separator between the operation of the assessment and the bandwagon learning mechanism. In assessment learning it is by definition the *cumulative* existing economic activity that matters the most and recent (additional) entries are not likely to be of particular additional importance. In contrast, in bandwagon learning recent examples of models locating in a certain area are more likely to influence a focal firm's decision than relatively 'old' examples, as the former provide the most accurate, up-to-date information on the current attractiveness of the location. It is firms' *moving to* the area that elicits following: their example consists of "going there" instead of "being there". Followers will be sensitive to when their precursors' behavior took place, and recent examples should exert a bigger influence than relatively old ones.[4]

Hypothesis 3: The more recent the entry of specific (bandwagon) models in a region, the greater the odds of a firm choosing that region. This does not hold for general (assessment) model entries.

Different degrees of firm-level uncertainty among the following firms will translate into different valuation and relevance of model behavior for entry location decisions. Some firms will be affected stronger by the model's information than others: they are more susceptible to social influence (Strang and Tuma, 1993; Greve, 2005). As decision experience is a prime way of decreasing decision uncertainty (Levitt and March, 1988), we expect a firm's own previous entry experience in the target country to be negatively associated with

[4] Previous studies on inter-organisational mimicry have taken a variety of, often contrasting, approaches with respect to the recentness of prior model behavior. Several studies have operationalized models' observed behavior as cumulative examples, e.g., as their sum or as a percentage of total organizations that have adopted at t-1 (e.g., Henisz and Delios, 2001; Guillen, 2002; Tobert and Zucker, 1983). Other papers have taken the number of adoptions in a previous year as the relevant set of models (Chan et al, 2006; Li et al, 2007; Delios et al, 2008). Still other papers (e.g. Baum and Ingram, 1998; Baum and Dahlin, 2007) have implicitly taken recentness into account by applying a time discounting method to the aggregated experiences of models, which puts higher weights on recent model behavior. We are unaware of any study in this area that has specifically tested for the impact of the recentness of model behavior on follower behavior.

their tendency to imitate others. Experienced firms can base their decisions more readily on their own learning experience in a country. As firms with previous experience face less uncertainty, the relative informational and legitimizing value of bandwagon model behavior is reduced and they are less likely to mimic specific model firms' prior location choices. The assessment valuation and agglomeration benefits attributed to the mass of model firms located in a region, in contrast, remains unchanged and firms may moreover be better able to assess the value of agglomeration benefits. This leads to the following hypothesis:

Hypothesis 4: The positive impact of specific (bandwagon) model entries on region choice is weaker for follower firms with previous experience in the target country. This is not the case for general (assessment) model entries.

METHODOLOGY

We test our hypotheses using a comprehensive dataset on Japanese electronics firms' manufacturing entries in the different provinces and administrative regions of China between 1979 and 2001.[5] This is an appropriate setting to test our hypotheses for several reasons. First, since China re-opened its doors to foreign investors only in 1979, these data allow us to follow the impact of agglomerations and previous foreign entrant behavior from inception to the recent past. Second, these Japanese location choices were surrounded by considerable levels of uncertainty concerning the political, regulatory and macroeconomic environment for foreign entrants. The observation period witnessed uncertainty surrounding the impact of the Asian financial crisis on the Chinese economy (1997-1999), future exchange rate policies, the SARS crisis, and the general operating environment for Japanese firms in light of popular and political sentiment against Japan. Still, Japan remains one of the largest investors in mainland

[5] For convenience, we consider the terms *regions* and *provinces* as identical in the remainder of this paper.

China, behind Hong Kong but ahead of the US (China National Bureau of Statistics, 2006). Furthermore, Japanese firms are important players in the global electronics market (Belderbos and Sleuwaegen, 2005), and affiliate location choices of Japanese firms were previously found to be particularly responsive to the location of previous Japanese investments (e.g. Head et al. 1995; Belderbos and Sleuwaegen, 1996; Martin et al. 1998; Henisz and Delios, 2001; Chung and Song, 2004). The setting therefore appears intuitively attractive to study the influence of organizational interactions on location choices.

The data on Japanese manufacturing entries in China were taken from the *Asia Shinshutsu Denshi Meika* (Survey of Japanese electronics firms in Asia) compiled by the Japanese *Research Institute of the Electronic Industry* in 1992, 1996, 1999, and 2002. This is an authoritative source on Japanese foreign investments in the broadly defined electronics industry with complete coverage of investments by both large public firms and privately held small and medium sized firms. The coverage of this data base is much broader, in particular for smaller and privately held firms, than the coverage of the often-used directory *Kaigai Shinshutsu Kigyou Souran* (Directory of Japanese Multinational Corporations), compiled by Toyo Keizai Inc. (e.g. Delios and Beamish, 2001; Delios et al, 2008). Our data give a reliable picture of all entries by both leading electronics firms and suppliers along the value chain of the broadly defined electronics industry over the years 1979-2001. This broad definition includes final goods ranging from digital cameras and household electrical equipment to railway signaling equipment and elevators, and parts and components ranging from semiconductors to plastic and metal molded parts. We combined the information from both directories to check for data consistency and in order to expand the scope of the affiliate counts to other industries than electronics in which horizontal business group members can be active.

Analytical procedure and model choice

Our empirical approach is carefully designed as a test for the comparative explanatory power of the different social learning mechanisms. First, we focus the empirical analysis deliberately on region choice decisions, *given* (i.e., 'conditional on') that the firms have decided to invest in China. By analyzing decisions on location, we focus on the phase in the decision process in which assessment and bandwagon learning processes are expected to have a dominant impact. The often studied *foreign market* entry decision, (e.g. Guillen, 2002) is not only driven by location characteristics and organizational interdependence, but also by the possession of firm-specific competitive advantages and resources that can be exploited abroad, as well as by domestic market positions and developments (e.g. Delios et al. 2008; Belderbos and Sleuwaegen, 2005). Hence, foreign entry decisions are much more complex in nature, which makes it more difficult to isolate the effect of assessment and bandwagon learning mechanisms. Analysis of entry decisions would necessitate inclusion of an accurate set of firm control variables to cover firm-specific advantage, which is not readily available for a broad sample of entrants including small and medium sized firms. This is why the current analysis focuses on the region choice, with the firm-specific rationale for foreign entry already established.

Second, we examine the impact of the different learning mechanisms *simultaneously*, as we argue that prior entries by relevant models contribute to agglomeration benefits at the same time as providing information or legitimizing value. We therefore empirically focus on 'models' that can potentially provide strong contributions to *both* social learning processes, being prior Japanese entries in China in the same, broadly defined, industry. The research design thus reflects the integrated and comparative nature of the proposed theoretical framework.

Dependent Variable: Region Choice

The focus of the present analysis is on firms' first entries into a Chinese province, since additional entries into the same province are likely to be dominated by firms' experiential learning as well as local intra-group supply relationships instead of social learning processes. Through this selection we empirically 'contain' the potential impact of experiential learning and 'same-firm agglomeration' on location decisions (e.g. Lieberman and Asaba, 2006). We do make a distinction between a firm's first entry into China, - a decision for which uncertainty levels are highest – and firms' subsequent entries into other provinces in China. The distinction between first entries and subsequent entries into additional provinces allows us to test Hypothesis 4.

In their exploration of alternative locations in China for subsequent entries, the location choice process will benefit from the China experience obtained through the first entry, and firms will face reduced levels of uncertainty. Although there is substantial region-specific heterogeneity in investment conditions (driving region choices), there is also a strong unifying role of the central government in terms of legislation, the treatment of foreign investment and FDI incentives, labour laws and the like, which provides for similar experience and circumstances across regions (e.g. Reuvid and Wong, 2000). Experience with operating manufacturing affiliates will allow firms to confront actual local circumstances with the information that was available on region characteristics ex ante, and to interpret this information more accurately in case of subsequent entries. More specific information on the attractiveness of other regions may become available by doing business with Chinese clients and suppliers that have operations in other regions. These considerations led to a comprehensive sample of 441 first manufacturing entries into China and 251 subsequent entries into additional provinces.

The focus of our analysis is on the region choice for these entries. China has been divided into 28 provinces and autonomous regions and 3 centrally administered municipalities (Beijing, Tianjin, and Shanghai).[6] As only very limited information on province characteristics is reported for Tibet and since the province did not receive electronics entries, it is omitted from the choice set. Of the remaining 30 regions, 23 received at least one Japanese electronics entry during the 22-year observation period. We consider all 30 provinces and regions as constituting the relevant choice set for the Japanese entrants. Since one could contend that provinces that did not receive any entries may not have been 'at risk' of being considered for entry, we tested whether these provinces are equal substitutes for regions that did attract entry. The results of Hausman tests suggested that this was the case, such that we included all 30 provinces and regions.[7]

All entries of Japanese firms were coded by assigning a 1 to the chosen region and a 0 to all other regions in the choice set. Our dependent variable is the probability $P_{i,j,t}$ that firm *i* chooses region *j* at time *t* from this set of regions. In case of subsequent entries, the province in which the firm has already entered is omitted from the choice set, as we do not examine repeat entries in the same province.

Table 2 shows the geographic dispersion of firms' first entries into Chinese regions between 1979 and 2001, distinguishing between first entries and subsequent entries into additional provinces. By far the largest numbers of establishments are found in Guangdong, followed by Shanghai, and Jiangsu, while a number of other provinces only received one entry. The distribution over regions is not very dissimilar for first and subsequent entries,

[6] Chongqing became an autonomous municipality in 1997, but is considered part of the Sichuan province in our data for consistency over time.

[7] The Hausman test examines the validity of an underlying assumption of the conditional logit model: the independence of irrelevant alternatives (Hausman and McFadden, 1984), which requires that omission or addition of a choice from the choice-set does not alter the relative odds among the remaining choices. The results of the Hausman tests showed that the null hypothesis of no violation (equality of coefficients across models) could not be rejected. The Chi square test statistic has an insignificant value of 4.86 (21 degrees of freedom) in case of model 4, Table 4. Similarly, insignificant test statistics were obtained for model 4 in Table 5 (subsequent entries) and the other models.

with the ranking of regions almost identical. It is interesting to note that entrants do not solely focus on the most popular provinces; first entries occur also in provinces that receive only few overall investments. Top locations for first entries (Guangdong and Fujian) are less frequent targets of subsequent entries while Jiangsu is chosen relatively more frequent as a subsequent province of entry.

Insert table 2 and Figure 1

Figure 1 shows the number of entries of Japanese electronics firms in China by year of entry, differentiated between first and subsequent entries,. The early years 1979-1980 showed no entries as Japanese firms generally adopted a wait and see attitude directly after the opening of China to foreign entry. The year 1981 saw the first entry by a Japanese electronics firm (Hitachi in Guangdong), followed by a number of entries in 1984. The highest entry activity took place in the years 1993-1996 (50-80 entries), but the number of first time entries still reached 32 in 2001. Subsequent entries show a rather similar pattern with peak years in 1993-1997 and a renewed increase in entry in 2001.

Independent Variables

Although conceptually the mechanisms of assessment and bandwagon learning can be clearly separated, we note that in the operationalization of 'generic' and 'specific' models it is difficult to capture these in their 'pure' form. In reality, both mechanisms are to some extent operative on *all* model types that can be distinguished. For instance, agglomeration benefits in assessment learning are best operationalized by the number of all previous entries of model firms likely to contribute to agglomeration economies. Still, the mere fact that many prior entries have been taking place in a particular region will also operate as a legitimizing force

and lower uncertainty surrounding the entry decision for potential followers. The *extent* to which any kind of previous entry serves as a bandwagon model depends on model firm characteristics, often in relationship with the characteristics of the focal firm itself (e.g. entries by 'similar' firms). Moreover, the extent to which bandwagon model learning occurs should be subject to the moderators we specified (i.e., recentness and experience). Ultimately, then, the relative extent to which a model indeed has an assessment rather than bandwagon 'character' will follow from the outcomes of the moderator analyses testing hypotheses 3 and 4.

Assessment model identification and measurement (Hypothesis 1a/b)

The total number of previous entries by model firms in a region (cf. hypothesis 1) was measured by counting the total number of prior electronics manufacturing establishments of Japanese firms in each region (i.e., the *Japanese affiliate count*). Earlier studies on location decisions of Japanese multinational firms (Smith and Florida, 1994; Head et al, 1995; Mayer and Muchielli, 1998) have reported a strong positive impact of Japanese firm agglomeration on subsequent Japanese firm entry decisions. This has been attributed to easier information sharing among Japanese firms, national preferences for amenities like schools and restaurants, and greater advantages of proximity due to the use of similar just-in-time delivery and inventory control systems (e.g. Belderbos and Carree, 2002). Likewise, agglomeration effects, e.g. through the greater availability of specialized suppliers and labor, occur primarily within same-industry clusters (e.g. Head and Ries, 1996; Baum et al, 2000). Our focus on Japanese firms' industry agglomeration has the advantage that it allows for a direct comparison of the simultaneous effects of a general assessment learning effect (*all* prior entries) with the bandwagon learning effects that should be stronger for prior entries by *subsets* of firms with specific model characteristics. To test for a declining marginal impact

of general agglomeration on the probability of location choice (Hypothesis 1b), we include the *square term of Japanese affiliate count* and expect a negative sign.

Bandwagon model identification and measurement (Hypothesis 2)

Regarding models' similarity to the focal firm, we chose two indicators of relevant informational spillover opportunities between investing firms: similarity of size and similarity of industry segment. The importance of size-similarity as a major referent is consistent with the 'size-localized competition' phenomenon in organization ecology theory (Baum and Mezias, 1992; Hannan and Freeman, 1977). Firms of different sizes tend to follow different strategies, and rely on different resource mixes (Haveman, 1993), such that actions of larger or smaller firms are less likely to provide informational or legitimizing value. Conversely, similarly sized organizations draw on similar resources and are likely to closely watch each other's (location) choices. By sharing relevant characteristics with the focal firm, models are likely to have faced similar trade-offs in the decision process to locate, increasing their informational relevance. Hence, size-similarity can play an important role in informational bandwagon learning effects. Prior studies have confirmed that size similarity between firms is an important predictor of imitative behavior. For instance, in a study of Californian savings and loan associations, Haveman (1993) showed that large banks tend to follow the market-entry decisions of other large banks. Baum et al. (2000) report significant effects of size-similarity of Ontario nursing home chains on the location of take-over targets. In the context of Japanese firms, size related hierarchy is important (e.g. Sako, 1992) and large and smaller firms within the electronics industry are likely to see themselves as belonging to the same macro organizational 'culture' (Peteraf & Shanley, 1997). We assess the impact of size similarity through the variable *similarly sized firms' affiliates count*, which is the number of Japanese affiliates in each Chinese region by firms with a similar organizational size as the

focal investing firm. Organizational size is measured by total employment of the Japanese parent firm. To assess size similarity we took the size distribution of all investing firms in the sample, and classified them into deciles. Each firm that occupies the same or a neighboring size decile is defined as similarly sized and its affiliates are included in the count.

A second group of model firms likely to be followed in bandwagon learning due to their similarity with the focal firm, are model firms operating in the same narrowly defined industry segment within the broadly defined electronics industry. Entry behavior by firms that are operating in similar product markets requiring similar manufacturing inputs and serving similar clients, will give more relevant informational clues to new entrants. We coded the detailed business line descriptions of the affiliates in the database in terms of their respective Japanese standard industry classification. In most cases we could code the industry segment at the 3 digit level and sometimes at the 4 digit level. This resulted in a classification of affiliates into a total of 37 industry segments. The segments include categories such as computers, printers, copiers, measuring equipment, lighting, radio & televisions, resistors & capacitors, integrated circuits, connectors, magnetic heads, etc. On the basis of this, we constructed the variable "*number of same industry segment affiliates*". This is the count of the number of affiliates (t-1) in a province classified in the same industry segment as the focal affiliate. If the focal affiliate is active in multiple segments, the sum of the prior entries in the province in these multiple segments was taken.

In the context of Japanese firms, strong institutional ties are present within horizontal business groups, or *keiretsu*.[8] Horizontal business groups are large diversified groups of firms centred around a large bank. The relationship among member firms features interlocking

[8] We control for the influence of *vertical* business group ties but we do not treat prior vertical group entry effects as manifestations of bandwagon learning. In the case of vertical business groups, clustering of firms abroad may also occur in order to replicate buyer-supplier relationships established in Japan e.g., Martin et al. (1998), in which case clustering is a phenomenon that may be better explained by cumulative within-group agglomeration benefits (e.g. Belderbos and Sleuwaegen, 1996; Hensiz and Delios, 2001; Belderbos and Carree, 2002).

shareholdings, stable long-term trade relationships, personnel exchange, and frequent information exchange on new markets, business opportunities, and technological developments (e.g. Gerlach, 1992; Belderbos and Sleuwaegen, 1996). Reports in the business press note that discussions within the so-called President's Council meetings (the yearly meetings of the presidents of the largest firms in the groupings) often center on foreign investment opportunities (Mori, 2002). Horizontal business groups are distinctive institutional firm groupings in Japan that tie groups of firms together and may exert institutional pressures on individual firms' behavior (Henisz and Delios, 2001). The legitimizing value of previous location choices made by members of these groups will put normative pressure on other group member firms to follow. At the same time, the informational value of prior group member entries in a province may be important to member firms choosing locations for their entries in China. We assess the impact of institutional ties within horizontal business groups by including the variable *same horizontal business group firms' affiliates count*, which is the number of existing manufacturing establishments in a Chinese province by Japanese firms that belong to the same horizontal business group as the focal firm. Horizontal group affiliation data is drawn from Brown & Company's *Industrial Groupings in Japan*. This data source classifies Japanese firms as belonging to one of the eight horizontal business groups, i.e. the Mitsubishi, Mitsui, Sumitomo, Fuyo, DKB, Sanwa, Tokai, and IBJ group.

We identify *high status firms* as the largest electronics firms in Japan with the most extensive international expansion experience in Asia during the period. We reasoned that in the context of foreign location decisions, high status is likely to be carried not only by size but also by extensive foreign operations. Due to their broad international experience, these firms are in a superior position to judge relative viability of different locations, and their location choices therefore lend legitimacy to following firms (e.g. Delios et al, 2008). They

are therefore expected to serve as important legitimizing role models in the eyes of major stakeholders of investing firms. Taking the 10 Japanese firms with the largest number of Asian affiliates in each year of our study resulted in the identification of 16 large electronics manufacturers, including all the prestigious Japanese electronics giants like Matsushita, Hitachi, Sony, Canon and Toshiba. *High status firms' affiliates count* is the number of manufacturing establishments in the Chinese province established by these 16 firms.

Assessment and Bandwagon mechanism contingencies.

To test the impact of recentness of model behavior (Hypothesis 3) on location choice, we calculated the average age of the establishments included in each count variable. Age is measured by the number of years the previously established affiliates had been in operation at the time of entry of the focal affiliate. For bandwagon counts, the average age of previous establishments is hypothesized to reduce the imitation tendency, whereas no such effect is expected for the general agglomeration count.

To test for the effect of target country (i.e., China) experience (Hypothesis 4) on the relative roles of assessment and bandwagon learning, we differentiate between firms' *first* region entries into China and firms' *subsequent* entries in additional Chinese regions. The latter case represents location decision processes where firms have already obtained experience in establishing and operating manufacturing plants in China. Hypothesis 4 suggests that bandwagon variables play a much more limited role in the location choice decision for such subsequent entries, while assessment models counts should remain important.

Control variables

In order to correctly attribute location choice decisions to previous model behavior, we controlled for the common impact of the Chinese region characteristics on all Japanese entrants regardless of previous models' behavior. We take these common factors (termed 'similar conditions' in Haunschild, 1992) into account by including a set of fixed and time-variant province characteristics, that are expected to affect the general attractiveness of specific regions to Japanese firms.

First, we control for other electronics establishment agglomeration in the province. *Other foreign electronics affiliate count* is measured as the count of existing electronics manufacturing establishments by non-Japanese investors in the province, including those from Hong Kong, Taiwan, and Macao. We could not include a further measure for all indigenous electronics establishments as no reliable official data exist on these over the period that we are investigating. On the other hand, the count of other electronics affiliates does include a large number of Chinese establishments, since an important share of the entries from Hong Kong and Taiwan in the period are due to 'roundtripping': Chinese firms investing in China through a Hong Kong or Taiwanese subsidiary to benefit from foreign investor status (e.g. Xiao, 2004). Given that the larger and growth oriented firms are most likely to make use of 'roundtripping' and that the electronics sector in China has been dominated by foreign owned establishments, the other foreign electronics affiliate count together with the Japanese electronics affiliate count should capture the lion's share of agglomeration benefits to new entrants in China' regions. As with Japanese affiliate agglomeration, we include the *square term* of the *other electronics affiliate count* in order to control for potential competition effects in highly agglomerated areas.

We also control for within-vertical business group agglomeration effects. Vertical business groups are groups of subcontracting firms, spin-off firms and trading companies around major large-scale assembly-type manufacturers. In vertical groups, the leading or

"core" firm can exert a degree of management control over other member firms, fortified through shareholdings, financial ties, and the dispatch of managers. Previous research has suggested that stable supplier-buyer relationships within vertical groups are replicated abroad (Martin et al., 1998) leading to a clustering of group affiliates in foreign locations (e.g. Belderbos and Sleuwaegen, 1996; Henisz and Delios, 2001; Belderbos and Carree, 2002). Information on vertical keiretsu group affiliation was obtained from Toyo Keizai's "affiliated companies data" (*Nihon no Kigyou Guruppu*). This data source includes information on corporate ownership, business groups, and supplier relationships of more than 30,000 Japanese firms. Complementary information was retrieved for smaller firms from the Electronics Manufacturers Directories (*Denshi Meika Risuto*) compiled by the Research Institute of Electronic Industry. *Vertical business group affiliate count* is the number of existing manufacturing establishments in a Chinese province by Japanese firms that belong to the same vertical business group as the focal firm.

We control for differences in the economic size of the regions by including *Province GDP*. The larger the economic size of a region, the more likely that it will attract foreign entry (e.g. Wheeler and Mody 1992).[9] Inclusion of GDP ensures that the coefficients of the count variables are not biased upwards because the agglomeration counts are correlated with the region's size. In addition, we include *Province GDP per capita* of the region as a measure of potential demand for foreign entrants' products. *Province manufacturing wage* of industrial workers in the region is included since the cost of labor may have a negative impact on the attractiveness of a region if foreign entrants are seeking low-cost and relatively unskilled workers (e.g. Belderbos and Carree, 2002). GDP and wage data were taken from the *China*

[9] This is a variant of the 'dartboard' theory, which suggests including total land area as a measure of the number of potential sites. Land area is not likely to have a major impact on investments in China given the large differences in economic development and land habitation between regions. By including GDP we weigh potential site area with the level of economic development (GDP intensity) of the region. Alternative specifications with population substituted for GDP led to similar results, though with a slightly inferior model fit.

Statistical Yearbook. We include the dummy variable *Province has seaport***,** which takes the value one if a major seaport city is located in the region. If this is the case, multinational firms can import and export materials, components, and final goods more cost effectively. We also control for the potential effects of *past colonial ties* of Chinese provinces with Japan. This dummy variable takes the value 1 for the provinces Heilionjiang, Liaoning, and Jilin, which are part of inner Manchuria, the region in China which was under Japanese control between 1931- 1945.

Finally, we control for provinces' economic policy measures to attract foreign entrants. Previous studies have found an important impact of early established zones with the broadest range of incentives: the four Special Economic Zones (SEZs) and the 14 designated Opening Coastal Cities (OCCs). These SEZs and OCCs were the only areas in China allowed to provide a range of tax incentives and other preferential treatments to foreign entrants (Coughlin and Segev, 2000). The preferential status of SEZs and OCCs changed in 1992, from which year on all provinces and regions were allowed to provide tax incentives to (export oriented) foreign investors (Reuvid and Yong, 2000: 20-23).[10] Hence, it can be expected that the relative advantage of OCC and SEZ regions became less distinctive over time (Delios et al., 2000). We include two dummy variables *province has SEZ/ OCC area*, which takes the value 1 if the province or region has hosted a SEZ or OCC: one dummy for the years up and till 1991, and one for the years after. Appendix A provides an overview of all variable descriptions.

Modelling and Estimation

In order to examine the impact of region characteristics on region choice, we use the conditional logit model (Greene, 1997), which has been the statistical model of preference in

[10] We tested for a more general structural break in the model around this time by performing a chow-chi square test on the equality of coefficients, but the null hypothesis that the coefficients are equal could not be rejected.

comparable prior research (e.g. Head et al, 1995; Henisz and Delios, 2001; Chang and Park, 2005). In this model, characteristics of a choice candidate (in our case: regions/ provinces) determine its relative attractiveness and hence the probability that it is chosen from among a set of alternatives. The general form of the conditional logit models we test is given in equation (1).

$$P_{i,j,t} = \frac{\exp(\alpha R_{j,t-1} + \beta M^{a}_{j,t-1} + \gamma M^{b}_{i,j,t-1})}{\sum_{j} \exp(\alpha R_{j,t-1} + \beta M^{a}_{j,t-1} + \gamma M^{b}_{i,j,t-1})} \qquad (1)$$

where $P_{i,j,t}$ = the odds of firm *i* to invest in region *j* rather than in any other region at time *t*

$R_{j,t-1}$ = (Control) characteristics of region *j* at time *t-1*.

$M^{a}_{j,t-1}$ = Foreign investor agglomeration count in region j at time *t-1*. (assessment learning mechanism)

$M^{b}_{i,j,t-1}$ = Firm$_i$-specific model count in region *j* at time *t-1* (bandwagon learning mechanism).

The model includes variables measuring counts of models in the region linked to assessment learning $M^{a}_{j,t-1}$ and to bandwagon learning $M^{b}_{i,j,t-1}$. With bandwagon learning, relevant previous entries also depend on the match between previous entrant and focal firm characteristics in terms of size similarity, industry segment, and business group affiliation (hence the subscript *i*). R_{jt}-are time variant and time invariant province characteristics that are expected to impact location choice in order to control for 'similar conditions' faced by the entrants. It is important to note that the specification reflects our intention to test for the additional impact of previous model entries in bandwagon learning *over and above* the impact of the general previous entry counts, as each $M^{b}_{j,t-1}$ is a subset of $M^{a}_{j,t-1}$. This is a conscious modeling choice, as our goal is to draw conclusions concerning the impact of the

agglomeration as a whole (the assessment learning mechanism) and the specific following of relevant agglomeration subsets (in bandwagon learning). All the counts are included in logarithmic form (after adding 1) since this reduces variance and allows for a direct comparison and interpretation of estimated coefficients as elasticities: the average elasticity of the probability of location choice with respect to the logarithm of the counts is calculated as (S-1)/S times the coefficient, where S is the total number of choices (c.f. Head et al. 1995, p. 237; Chang and Park, 2005). All time-varying province characteristics and counts are lagged by one year to allow a response time by the choosers, to reflect the proper time-ordering and to exclude the possibility of simultaneity between entrant and model behavior.

It is useful to note here that in conditional logit models, chooser attributes (for instance, whether a firm faces a first or subsequent province choice) are not included as covariates. Since such traits do not vary between provinces, they cannot as such determine which one is chosen. Chooser/ firm traits do have an impact on choices, however, if they systematically alter the *response* to certain choice characteristics. For instance, chooser heterogeneity does enter our empirical model where chooser attributes are matched with attributes of models, i.e. where only firms in a particular size class are expected to respond to previous entries by firms of similar size. Hypothesis 4 suggests a further source of firm heterogeneity: it predicts that the bandwagon variables impact on the location choice decision for first time entries, but not for subsequent entries. We examined this source of heterogeneity in responses by estimating equation (1) separately for firms' first entries and for firms with previous China entry experience (in order to test hypothesis 4). We employ such a 'split sample' analysis rather than including an interaction term with the assessment and bandwagon variables, because a split sample analysis is the more general test specification when comparing coefficients between groups of observations, i.e., firms (Hoetker, 2007). A split sample test does not assume that unexplained variance is identical

between the two groups of entries (first vs. subsequent) and also allows for the impact of other province characteristics to differ systematically between these groups, leading to consistent within-group estimates.

RESULTS

Summary statistics and correlations of the variables are presented in Tables 3a and 3b for the first entry sample and the subsequent entry sample, respectively. All variables except past colonial ties with Japan are positively correlated with location choice. The correlations between the count variables can be substantial and sometimes exceed 0.90. High correlations between independent variables are a more general feature of conditional logit models where choosers/ firms face the same set of choice/ region characteristics. In our empirical model all Japanese entrants in a given year face the same province characteristics. Positive correlations are also partly following from the overlaps in the count variables, as the bandwagon counts are subsets of the agglomeration counts. Still, the actual overlaps in our sample are not that large. On average, of the total number of Japanese affiliates observed in a year, 26 percent are similarly sized models, 6 percent are same industry segment models, 32 percent are high status models, and 5 percent are same horizontal business group models.

Insert Tables 3a and 3b here

Results of the analyses of region location choices in China are presented in Tables 4 (first entries) and 5 (subsequent entries). The first model in Tables 4 and 5 shows the results of a base specification containing only control variables. Model 2 adds the Japanese affiliate

count variables (assessment learning, Hypothesis 1), model 3 adds the bandwagon learning variables (Hypothesis 2), and in model 4 the effect of the recentness (age) of bandwagon models is included (Hypothesis 3). The difference in results between first entries (Table 4) and subsequent entries (Table 5) allow for a judgment on Hypothesis 4.

Insert Tables 4 and 5 here

The results of the base model 1 in Table 4 are largely consistent with expectations and robust across the different specifications. *Province GDP* and *Province GDP per Capita* are both significantly positive. Provinces with seaports and with preferential SEZ/OCC foreign investment zones also attract more entries, with the impact (coefficient) of special zones much larger in the period up to 1991 when such zones were the most distinctive features of provinces. The average annual manufacturing wage has an unexpected positive sign but is not significantly different from zero. The dummy for past colonial ties has a positive sign but is not significant either. The same holds for the coefficients of the other electronics affiliate counts.[11] In model 2, the addition of the Japanese affiliate count variables significantly improves the model's explanatory power: the likelihood ratio test suggests that the hypothesis that coefficients of the assessment mechanism variables are jointly zero has to be rejected at the 1 percent significance level. *Japanese firms' affiliate count* is positive and highly significant, while its square term is negative and significant. This is consistent with our expectation in hypotheses 1a and 1b that local agglomeration of Japanese firms in a foreign location attracts further entry by other Japanese firms, but that this impact decreases and turns

[11] This is not related to the inclusion of the square term. Models with only a linear term included showed a similar insignificant coefficient of the other electronics affiliates count.

negative as the increasing level of agglomeration leads to more intensive competition among agglomerated firms. The significance of these effects does not change if the bandwagon model counts are included in model 3 or if age variables are added in model 4. The estimated coefficients in model 2 suggest that the assessment learning mechanism reaches its maximum attracting power at more than 600 entries, an out-of-range level far beyond the affiliate numbers in any province. However, in model 3, with the bandwagon variables included, the estimated maximum effect occurs at 28 affiliates, a level reached by more than 10 provinces in the second half of the 1990s.[12]

If the bandwagon mechanism variables are added to the agglomeration/assessment variables in Model 3, *similarly sized firms' affiliates count* and *same industry segment affiliates count* show a positive and significant impact on the location choice of Japanese firms, while the other two bandwagon variables are insignificant. Model 3 does have a significantly better explanatory power than model 2, as indicated by the LR test. These results lend support to Hypothesis 2, where it concerns the effect of 'similar' model behavior.

In model 4 the recentness (captured by age) of the bandwagon and assessment models is included. The inclusion of the recentness variables again is a statistical improvement on model 3, as the LR test indicates. In addition to the similar firms' affiliate counts, the high status firm count now shows a significantly positive influence. The age variables for these counts are significantly negative: the more recent the location choices by similarly sized, same industry segment, and high status firms, the higher their attraction to new affiliate entries. The third bandwagon learning variable, same horizontal business group count, and its

[12] This lower level is partly due to the influence of same industry segment affiliates count, which is also likely to pick up segment-specific agglomeration affecting the linear term of the all Japanese firms' affiliate count. In model 4, the effect of the count is also influenced by the age structure of affiliates in the province, such that a simple maximum cannot be established. We examined whether the negative sign of the square terms of Japanese agglomeration was robust to taking into account the non-linearity of the conditional logit model (Hoetker, 2007), by calculating signs and significance of the second order derivative of location choice probabilities with respect to the agglomeration variables as suggested by Ai and Norton (2003). We found a consistently negative sign for the second derivative across observations.

age variable carry the expected sign patterns but do not reach statistical significance. In all, the results provide support for the bandwagon effects of Hypothesis 2, in particular once the impact of recentness is taken into account. Table 4 also shows that the impact of model age is very different for the assessment mechanism variable (Japanese affiliate count), as the age variable has a significantly *positive* coefficient, in contrast with the negative coefficient for the bandwagon variables. A possible explanation for this positive impact of age is that older establishments of model firms that have survived over time are perceived as more strongly embedded and more important contributors to local agglomeration benefits than relatively recent additions to the agglomeration.[13] In any case, the results confirm that indeed an important difference exists between the roles of model recentness in assessment versus bandwagon model-following, in support of Hypothesis 3.

In Table 5, the results of the base model for subsequent entries into China are very similar to the results for first entries. GDP and GDP per capita as well as the two policy dummy variables have significantly positive influences. In addition, agglomeration of other electronics affiliates now has a positive and significant coefficient. Adding the Japanese affiliate count variables in model 2 significantly improves the fit of the model, while the count variable is positive and significant, in accordance with Hypothesis 1a. The square term of the Japanese affiliate count variables, however, is insignificant, rejecting Hypothesis 1b for subsequent entries.[14] Inclusion of the bandwagon variables in models 3 and 4 leads to markedly different results than those reported for first entries. The Japanese firms' affiliate

[13] One indication for this is the correlation between the age of all Japanese affiliates and an indicator of the average size of affiliates in the regions (a correlation coefficient of 0.93). Larger affiliates are likely to contribute relatively more to agglomeration benefits (e.g. Shaver and Flyer, 2000). In sensitivity tests, however, the average size of affiliates had no significant effect on region choice, which is partly due to the high correlation with age.

[14] This pattern is confirmed by analysis of the second order derivative of the choice probability with respect to the Japanese affiliate count, which was insignificant for most observations. We also examined whether entries in adjacent provinces affect regions choice, as there may be agglomerations spread over multiple regions resulting in inter-regional agglomeration externalities The coefficient of this variable was not significant in the subsequent entry model but positive and significant in the first entry model, suggesting that some inter-regional agglomeration benefits exist; the results for the other variables continued to hold.

count variable remains significant throughout models 3-4. In contrast, among the bandwagon variables, only the same industry segment affiliates count is significant with a positive sign, while the other bandwagon variables are insignificant. At the same time, the age of the same industry segment affiliates count is insignificant in model 4, which is inconsistent with a bandwagon learning perspective formulated in Hypothesis 3. We discuss these results in more detail in the final section. Overall, these results provide support for Hypothesis 4: in subsequent location choices by firms already established in China, the uncertainty driven bandwagon effects are much weaker, while the assessment effect remains robust.

Interpretation and Magnitude of Estimated Effects

The magnitude of the individual estimated effects can be interpreted in a relatively straightforward manner in most cases. As discussed in the empirical method section, the average elasticity of the probability that the location is chosen with respect to the independent variable approximates the estimated coefficient. The elasticity is (S-1)/S times the coefficient, where S is the total number of choices, which gives 29/30 times the coefficient in the current setting. Hence, the coefficient of 0.64 for the similarly sized firm model count (model 4, Table 4) implies that on average, if a region increases its number of similarly sized firms' establishments by 10 percent, it has a 6.3 percent higher probability that an entrant chooses to locate in it. This elasticity is higher than that of GDP (5.5 percent) but smaller than the elasticity estimated for GDP per capita (15.1 percent). For high status models this effect is roughly 3.6 percent.

The total impact of prior entries by bandwagon model firms can be decomposed into three effects. First, there is the direct impact of the bandwagon effect. Second, these entries also add to the Japanese agglomeration count. For small initial agglomeration levels (with a small impact of the square term), the elasticity of region choice with respect to changes in the

number of Japanese affiliates can be calculated as an additional 6 percent. Finally, the impact of existing models is affected by the timing (recentness) of model entries. More recent entries have a greater positive impact on location choices of prospective entrants. Hence, the impact of specific investment models can be very high if they serve as models through different learning mechanisms. On the other hand, if the bandwagon models are older entries and not replenished by more recent model behavior, the bandwagon learning effects are quickly eroded. The elasticities of the probability of region choice with respect to model age range between -0.51 and -0.73. The precise magnitude of the impacts of previous model entries depends on their role in bandwagon learning and the existing populations of models with their age structure.

DISCUSSION

Why do firms cluster in some locations when they move abroad? In this paper we propose and test a broad social learning model of clustering in entry location choice in order to integrate three important theoretical perspectives explaining the clustering behavior of firms in their foreign expansion: agglomeration benefits, information externalities derived from vicarious learning, and the institutional perspective of legitimizing behavior. In the integrated model, prospective entrants learn about the relative attractiveness of alternative locations by observing the actions of various sets of previous entrants (so-called 'models'). On the one hand, learning can be directed at assessing the economic feasibility of entry by observing broad sets of models (assessment learning), which corresponds to the investor agglomeration and externalities explanation of location choice. On the other hand, learning can also be directed at reducing firm-level uncertainties and increasing legitimacy by following specific models over others ('bandwagoning'), corresponding to the information externalities and legitimacy explanations of location choice imitation. We argue that these two forms of social learning have to be juxtaposed, as they can and will operate simultaneously, with previous model examples potentially contributing to assessment and bandwagon learning at the same time. We argue that two crucial moderators affect the relative importance of the two types of learning. First, we propose that the recentness of model behavior will not be important for agglomeration externalities but weighs more heavily in bandwagon learning, as recentness is positively related to informational and legitimizing value. Second, previous target country experience of the investing firm is expected to reduce firm level uncertainty and the need to follow model firms' examples, but should leave the attractiveness of the region due to agglomeration externalities unchanged.

Analysis of the location choice for the population of Japanese electronics firms' entries into China during 1979-2001 provided broad support for our hypotheses. For firms'

first entries into China, the larger the local agglomeration of other Japanese firms, the stronger the attraction of new Japanese entrants, but the impact decreased at higher agglomeration sizes. This indicates that entering Japanese firms follow a frequency-based imitation strategy in order to situate their foreign establishment in a location that provides the highest level of general feasibility, profitability and sustainability, in line with the assessment learning mechanism we proposed. At higher levels of agglomeration, the positive effect tapers off, presumably as rising competition for customers and inputs reduces the relative attractiveness of crowded locations. Besides this general frequency-based imitation, investing firms simultaneously engaged in trait-based imitation, whereby they are more selective about the specific characteristics of model firms. The strongest preference was found for locations that have large numbers of establishments by Japanese firms with similar size, establishments within the same industry segment, and establishments by firms with high status due to their position as industry leader with internationalization experience. This supports the complementary role of the bandwagon learning mechanism through which investing firms aim to reduce their uncertainty or increase the legitimacy of their entry decision by following specific model firms. The results also confirmed the crucial demarcation between the assessment and bandwagon mechanisms in the differential impact of the recentness of model behavior. The age of local establishments by similarly sized firms and high status firms reduced their positive impact on location decisions, suggesting that it is only recent behavior of specific models that provides stronger rationality or legitimizing value, whereas this effect was not found for the recentness of agglomeration establishments. On the contrary, the impact of Japanese agglomeration in assessment learning even increased with the age of establishments, suggesting that older and perhaps larger and more locally embedded affiliates contribute more to local agglomeration benefits than younger ones.[15]

[15] Note that our argument is different from population ecology's basic tenet that organizations' legitimacy (i.e.,

Another strategy we followed to empirically distinguish the two mechanisms, involved a comparison of *first* entries into a Chinese region with *subsequent* entries in additional regions. The latter decisions reflect firms' exploration of new locations in China after having obtained experience operating in the country. The decisions for these subsequent entries showed a different pattern. While the impact of assessment models remained strong, the bandwagon models, with the exception of same industry segment affiliates, no longer had an impact on entry location choice. This confirmed our hypothesis that reduced firm level uncertainty (by gathering experience in the host country environment) reduces the need and relative value of bandwagon learning but not the benefits of agglomeration.

A number of empirical findings in our analysis merit further discussion. The findings on the role of prior entries in the same narrowly defined industry segment were mixed. We expected a positive bandwagon learning effect, since model firms that are operating in the same more narrowly defined markets are likely to provide more relevant information clues. Indeed, the count of prior same industry segment entries exerted a positive impact on region choice, but we found no evidence that this impact reduced with the age of prior entries or in the case of subsequent entries. These findings appear to suggest that following same industry segment models is less motivated by the uncertainty reduction that characterizes bandwagon learning. The explanation for these results may need to be sought in the multiple types of information contained in this variable. Although same industry segment firms are similar in a very relevant way and may be a source of bandwagon learning, this similarity may also lead to specific agglomeration benefits. For instance, the scale effects for dedicated specialist suppliers or demand side externalities related to reduced search costs for customers (e.g. Chung and Kalnins; 2001; Baum and Haveman, 1997) may in some cases be stronger at the

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their institutional embeddedness and acceptance) increases with time and - as a result- their hazard of failure declines (Carroll, 1984; Baum and Oliver, 1992). Population ecology focuses on the age of the *organizational forms* and their survival potential over time. In contrast, neo-institutional theory as applied here, deals with the 'age' (i.e., recentness) of organizational *action* (e.g. Haunschild and Miner, 1997).

more detailed industry segment level. This explanation would be consistent with the absence of both recentness and experience moderation.

We also examined the possible role of within-segment agglomeration in the context of inter-firm competition, by investigating whether firms with more capabilities may be reluctant to collocate with close competitors out of fear that their best practices and technologies will spill over to rivals (e.g. Yoffie, 1993; Shaver and Flyer, 2001; Alcacer and Chung, 2007). [16] Larger and more resourceful firms contribute relatively more to such spillovers than smaller, less resourceful, firms. Taking firm size as a rough proxy of resources and capabilities, we included the interaction between firm size and the same industry segment affiliates count in model 4. The coefficient of this interaction effect was negative and significant in both the first and subsequent entry models. These results are consistent with the presence of within-industry segment agglomeration externalities and suggest a moderating role of inter-firm competition in the firm-specific benefits of such agglomeration.

The results provided no support for the impact of horizontal business groups on foreign location decisions. We did observe a positive effect of business group entries but only for *vertical* business group agglomeration, where focal firms follow location decisions of other vertical group firms, presumably in order to benefit from within-group trade replication. This leaves us with less additional explanatory power of legitimizing pressure within Japanese horizontal business groups on entry location choice, a finding that is in line with earlier results (Henisz and Delios, 2001). One explanation is that horizontal group legitimacy requires foremost a high and relevant status of model firms, and that there are heterogeneous responses to prior group entries depending on the within-group status (Kim et al., 2004) of the investing group member. The status aspect is may already be captured to a large extent in

[16] We thank an anonymous referee for bringing this issue to our attention.

our analysis through the inclusion of prior entry by high status firms with abundant internationalization experience.

Our analysis shows that the various perspectives on clustering in foreign entry locations play a complementary role in explaining location decisions. Both assessment and bandwagon learning mechanisms have to be taken into account simultaneously to explain location choice behavior under uncertainty. Hence, in line with Haunschild and Miner (1997) we conclude that multiple modes of imitation and their related learning mechanisms are operating simultaneously, which underlines previous findings (e.g. Shaver, Mitchell and Yeung, 1997; Lieberman and Asaba, 2006). This would suggest that managers facing uncertainty concerning appropriate entry locations for foreign manufacturing investments could combine their own broad assessment of locations in which they rate relevant location characteristics (among which foreign investor clusters), with informational clues provided by recent entry location choices made by knowledgeable and comparable firms. The latter economizes on the costs of information gathering and takes into account that under environmental uncertainty a proper individual assessment of future location conditions may be difficult to make. On the other hand, a greater weight of bandwagon learning also bares the risks inherent to 'bandwagoning', i.e. that firms follow the mistakes of others rather than adopting best practice. In addition, an individual assessment of locations can provide more tailored information on the cost and benefits of the alternatives in relation to the specific resources and needs of the firm. Future research should examine the performance implications of a greater reliance on bandwagon learning vis-à-vis assessment learning in decision making on location choice.

Our results complement recent findings on organizational mimicry in the broader area of foreign entry decisions where the focus has been on the distinction between competitive rivalry on the one hand, and the informational and legitimizing influences of models on the

other (Gimeno et al, 2005; Delios et al, 2008; Chan et al, 2006). Our results suggest that agglomeration effects and assessment learning should be taken into account and distinguished as an important driver of foreign investment location decisions that is expected to work in conjunction with competitive and bandwagon drivers. Relevant traits in bandwagon learning should be well circumscribed and detailed, beyond the aggregated level of same-country and (broad) same-industry models taken as relevant in earlier work (e.g. Delios and Henisz, 2000; Chan et al., 2006; Li et al., 2007). Within such broad groups of same-country and same-industry models, traits related to the legitimizing and informational relevance of specific models should be distinguished to more accurately assess the role of bandwagon learning as distinct from agglomeration effects. Our results also suggest that more attention should be paid to firm heterogeneity in bandwagon and assessment learning, as we identified the level of firm-level uncertainty an important moderator. Future research on foreign entry and location could extend this approach by more specifically integrating models of competitive rivalry along the lines in prior work (Gimeno et al., 2005; Delios et al. 2008; Lieberman and Asaba, 2006) but should also take into account that competitive considerations may moderate agglomeration benefits related to resource heterogeneity (Alcacer and Chung, 1997). In general, more research attention needs to be devoted to the systematic analysis of organizational mimicry in integrated models that supersede, incorporate, and discriminate between different theoretical perspectives that have been used to explain such behavior.

Finally, we note some important limitations of our study. While we examine the role of a number of specific types of bandwagon models (i.e. those of high status, of similar size, those active in a similar industry segment or those belonging to the same business group), we could not make a clear distinction between the informational and legitimizing value attached to these models' behavior. Partially, this is an issue inherent to the concepts of informational and legitimizing bandwagoning, as the legitimizing power of models is seldom devoid of

informational value. Partially, however this was also due to our still crude identification of relevant models of either type. Future work can attempt to identify in greater detail classes of models that are more unequivocally related to one or the other bandwagon mechanism. In the case of legitimizing models, one could for instance think of firm surveys to identify high status firms rather directly and more independently of the decision process under study.

Another limitation of our research was that the empirical analysis focused on one industry (electronics) and firms from one home country (Japan) investing in another (China). Japanese entry locations in the Chinese electronics industry was an appropriate testing ground for our integrated theoretical framework due to the strong clustering observed among Japanese firms, the large number of entries in China after its investment liberalization policies, and the lack of information and high uncertainty concerning China's investment environment. On the other hand, this focus necessarily reduces the scope for generalizations. Replication and extension of this type of study for location decisions in other countries or industries, or by firms from different home countries will help build more insight into the importance of the various types of model-follower patterns and mechanisms in international entry location decisions. In doing so it adds to our understanding of one of the principal modes of globalization.

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Table 1.

Parallel Social Learning Perspectives on Location Choice Decisions

	ASSESSMENT LEARNING PERSPECTIVE	**BANDWAGON LEARNING PERSPECTIVE**
Observation focus	Wide range of prior entries	Narrow: subsets of prior entries
Implicit traditional decision frame	General, contextual	Model-specific
Information instrumentality	Assess long-term feasibility, profitability, sustainability of entry in a location	Lower immediate decision uncertainty
Object differences:		
Type of models being followed	All firms that contribute to agglomeration benefits	Specific (sets of) firms of particular informational relevance
Type of resulting imitation pattern	Broad, frequency-based .	Focussed, trait-based
Contingency differences (response moderation)		
Recentness of models' behavior	Limited	Strong; informational value increases with recentness
Focal firms' own previous experience	Limited	Strong; informational value and uncertainty decline with own experience
Result	Agglomeration effects	Bandwagon effects

Table 2.
Geographic distribution of new Japanese electronics manufacturing establishments in China (1979 – 2001)
First entries and subsequent entries into additional provinces

Province	First Entry	Subsequent Entry	All entries
Guangdong	154	67	221
Shanghai	103	36	139
Jiangsu	56	48	104
Liaoning	31	16	47
Beijing	20	17	37
Tianjin	20	16	36
Zhejiang	19	9	28
Shandong	15	8	23
Fujian	7	10	17
Hebei	3	4	7
Sichuan	3	5	8
Anhui	2	4	6
Hubei	1	3	4
Henan	1	2	3
Shanxi	0	3	3
Guangxi	1	1	2
Shaanxi	2	0	2
Heilongjiang	1	0	1
Hunan	0	1	1
Inner Mongolia	1	0	1
Jiangxi	0	1	1
Jilin	1	0	1
Total	***441***	***251***	***692***

Table 3a. Means, Standard Deviations and Correlations of variables. First Entries

	First entries	mean	st.dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Province choice	0,33	0,18																					
2	All Japanese firms' affiliate count	1,83	1,42	0,31																				
3	All Japanese affiliate firms' count - squared	3,29	5,67	0,33	0,93																			
4	Age of Japanese firms' affiliate	0,69	0,80	0,18	0,73	0,53																		
5	Similarly sized firms' affiliates count	0,56	1,14	0,33	0,94	0,95																		
6	Age of similarly sized firms' affiliates	0,44	0,70	0,22	0,82	0,73	0,68	0,83																
7	Same industry segment affiliates count	0,23	0,53	0,30	0,73	0,80	0,41	0,76	0,55															
8	Age of same industry segment affiliates count	0,23	0,55	0,23	0,71	0,79	0,46	0,69	0,59	0,85														
9	Horizontal business group firms' affiliates count	0,60	0,32	0,72	0,28	0,27	0,19	0,28	0,22	0,23	0,21													
10	Age of horizontal business group firms' affiliates	0,61	0,36	0,48	0,22	0,20	0,26	0,21	0,19	0,16	0,16	0,85												
11	High status firms' affiliates count	0,54	0,85	0,28	0,93	0,92	0,65	0,88	0,74	0,72	0,69	0,26	0,26											
12	Age of high status firms' affiliates	0,52	0,76	0,17	0,75	0,62	0,76	0,62	0,62	0,48	0,60	0,19	0,19	0,82										
13	Other electronics foreign affiliate count	3,24	2,24	0,21	0,78	0,64	0,78	0,67	0,65	0,51	0,51	0,21	0,19	0,75	0,75									
14	Other electronics foreign affiliate count - squared	2,43	29,18	0,14	0,34	0,34	0,22	0,32	0,26	0,26	0,24	0,97	0,76	0,35	0,31	0,45								
15	Same vertical business group firms' affiliate count	0,39	0,23	0,12	0,28	0,35	0,15	0,29	0,19	0,24	0,19	0,14	0,14	0,28	0,19	0,29	0,17							
16	Province GDP	6,76	1,20	0,15	0,59	0,46	0,58	0,56	0,49	0,39	0,39	0,18	0,17	0,55	0,55	0,82	0,38	0,15						
17	Province GDP per capita	-1,19	0,76	0,17	0,76	0,64	0,53	0,64	0,59	0,49	0,51	0,21	0,18	0,69	0,62	0,74	0,46	0,23	0,62					
18	Province manufacturing wage	8,25	0,57	0,93	0,49	0,50	0,38	0,46	0,47	0,38	0,39	0,16	0,13	0,52	0,48	0,51	0,42	0,16	0,47	0,85				
19	Province has SEZ/OCC area (1982-1992)	0,90	0,47	0,12	0,16	-0,17	0,78	0,32	0,37	-0,15	0,16	-0,27	-0,26	0,15	0,32	-0,58	-0,75	-0,28	-0,75	-0,27	-0,29			
20	Province has SEZ/OCC area (1993-22)	0,51	1,22	0,26	0,61	0,63	0,42	0,66	0,46	0,52	0,43	0,15	0,14	0,62	0,56	0,58	0,34	0,18	0,43	0,35	0,26	-0,95		
21	Province has seaport	0,33	0,47	0,23	0,63	0,54	0,48	0,58	0,52	0,44	0,41	0,16	0,12	0,55	0,51	0,55	0,19	0,14	0,43	0,37	0,14	0,23	0,59	
22	Past colonial ties with Japan	0,10	0,31	-0,16	0,30	0,28	-0,39	0,58	0,34	0,30	0,34	0,29	0,15	0,20	-0,18	-0,14	-0,97	-0,12	0,19	0,94	-0,80	-0,28	-0,74	0,00

Note: all variables except dummy variables are in natural logarithms

Table 3b. Means, Standard Deviations and Correlations of variables. Subsequent Entries into additional provinces.

	Subsequent entries	mean	st.dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Province choice	0,35	0,18																					
2	All Japanese firms' affiliate count	1,91	1,43	0,32																				
3	All Japanese affiliate firms' count - squared	3,52	5,80	0,35	0,93																			
4	Age of Japanese firms' affiliate	0,77	0,83	0,17	0,73	0,53																		
5	Similarly sized firms' affiliates count	0,61	1,12	0,32	0,94	0,94	0,67																	
6	Age of similarly sized firms' affiliates	0,52	0,76	0,27	0,79	0,68	0,72	0,89																
7	Same industry segment affiliates count	0,22	0,55	0,39	0,72	0,79	0,48	0,73	0,52															
8	Age of same industry segment affiliates count	0,26	0,60	0,22	0,69	0,69	0,46	0,68	0,54	0,84														
9	Horizontal business group firms' affiliates count	0,14	0,47	0,12	0,38	0,37	0,24	0,39	0,29	0,27	0,26													
10	Age of horizontal business group firms' affiliates	0,13	0,43	0,85	0,38	0,26	0,25	0,32	0,27	0,18	0,20	0,84												
11	High status firms' affiliates count	0,65	0,88	0,29	0,95	0,91	0,66	0,96	0,73	0,78	0,67	0,36	0,28											
12	Age of high status firms' affiliates	0,61	0,79	0,18	0,76	0,66	0,78	0,66	0,68	0,46	0,51	0,25	0,25	0,82										
13	Other electronics foreign affiliate count	3,55	2,17	0,23	0,79	0,63	0,72	0,70	0,66	0,55	0,59	0,29	0,26	0,76	0,76									
14	Other electronics foreign affiliate count - squared	25,14	36,94	0,82	0,21	0,24	0,96	0,22	0,16	0,18	0,16	0,81	0,57	0,22	0,18	0,31								
15	Same vertical business group firms' affiliate count	0,56	0,26	0,15	0,37	0,39	0,20	0,37	0,26	0,29	0,25	0,17	0,13	0,35	0,24	0,28	0,98							
16	Province GDP	7,50	1,15	0,16	0,59	0,45	0,62	0,59	0,50	0,38	0,38	0,23	0,23	0,57	0,58	0,83	0,29	0,20						
17	Province GDP per capita	-0,95	0,68	0,18	0,72	0,66	0,54	0,68	0,58	0,52	0,51	0,29	0,24	0,72	0,66	0,73	0,36	0,27	0,58					
18	Province manufacturing wage	8,48	0,50	0,11	0,45	0,48	0,34	0,45	0,38	0,35	0,36	0,18	0,16	0,49	0,46	0,39	0,33	0,19	0,35	0,88				
19	Province has SEZ/OCC area (1982-1992)	0,33	0,27	0,69	0,34	-0,14	0,35	-0,13	0,50	-0,15	-0,17	-0,28	-0,29	-0,27	0,71	-0,38	-0,46	-0,16	-0,58	-0,16	-0,23			
20	Province has SEZ/OCC area (1993-22)	0,58	0,97	0,29	0,69	0,62	0,37	0,59	0,47	0,52	0,42	0,21	0,18	0,65	0,51	0,57	0,26	0,26	0,42	0,35	0,19	-0,60		
21	Province has seaport	0,37	0,46	0,23	0,66	0,59	0,45	0,67	0,52	0,47	0,43	0,25	0,18	0,59	0,53	0,56	0,12	0,24	0,44	0,42	0,15	0,14	0,64	
22	Past colonial ties with Japan	0,99	0,30	-0,23	0,19	0,23	-0,24	0,31	-0,13	0,33	0,32	0,42	0,25	0,38	0,19	0,19	-0,95	-0,42	0,11	0,11	-0,92	-0,15	-0,86	-0,13

Note: all variables except dummy variables are in natural logarithms

Table 4. Chinese Region Characteristics Predicting Japanese Affiliate Location Choice First entries into China.

	model 1	*model 2*	*model 3*	*model 4*
All Japanese firms' affiliate count		0.803***	0.757***	0.832***
		(0.211)	(0.227)	(0.261)
All Japanese affiliate firms' count - squared		-0.062*	-0.113***	-0.208***
		(0.032)	(0.039)	(0.049)
Age of Japanese firms' affiliate count				0.678***
				(0.226)
Similarly sized firms' affiliates count			0.389***	0.638***
			(0.148)	(0.164)
Age of similarly sized firms' affiliates count				-0.530***
				(0.180)
Same industry segment affiliates count			0.251**	0.266*
			(0.112)	(0.145)
Age of same industry segment affiliates count				-0.054
				(0.138)
Same horizontal business group firms' affiliates count			-0.152	0.078
			(0.209)	(0.261)
Age of same horizontal business group firms' affiliates count				-0.515
				(0.327)
High status firms' affiliates count			-0.177	0.371*
			(0.165)	(0.219)
Age of high status firms' affiliates count				-0.760***
				(0.227)
Other electronics foreign affiliate count	0.027	-0.095	-0.010	0.071
	(0.147)	(0.162)	(0.177)	(0.189)
Other electronics foreign affiliate count - squared	0.000	0.003	0.001	0.005
	(0.010)	(0.011)	(0.012)	(0.009)
Vertical business group affiliate count	0.299	0.296	0.358*	0.376**
	(0.184)	(0.186)	(0.188)	(0.188)
Province GDP	0.942***	0.874***	0.764***	0.566**
	(0.189)	(0.185)	(0.197)	(0.224)
Province GDP per capita	2.098***	1.535***	1.401***	1.524***
	(0.442)	(0.445)	(0.449)	(0.499)
Province manufacturing wage	0.575	-0.070	-0.037	0.147
	(0.634)	(0.705)	(0.711)	(0.774)
Province has SEZ/OCC area (1982-1992)	0.531***	0.256**	0.278**	0.330**
	(0.113)	(0.124)	(0.124)	(0.137)
Province has SEZ/OCC area (1993-2002)	0.269***	0.139	0.155*	0.285***
	(0.083)	(0.091)	(0.091)	(0.105)
Province has seaport	0.550**	0.541**	0.423*	0.247
	(0.231)	(0.234)	(0.247)	(0.251)
Past colonial ties with Japan	0.418	-0.268	-0.189	0.133
	(0.332)	(0.398)	(0.400)	(0.438)
Observations	13230	13230	13230	13230
Loglikelihood	-882.77	-872.75	-865.68	-850.89
McFadden's Pseudo R-squared	0.41	0.42	0.42	0.43
Chi squared test	1234.3***	1254.4***	1268.5***	1298.1***
LR test (model 2 - model 1)		20.1***		
LR test (model 3 - model 2)			14.1**	
LR test (model 4 - model 3)				29,6***

Notes: Standard errors in parentheses; *, **, *** significant at 10%, 5%; 1%, respectively. Number of observations equals number of choosers times number of alternatives (regions) per choice.

Table 5. Chinese region characteristics predicting Japanese Affiliate Location Choice Subsequent Entries into Additional Chinese Regions.

	model 1	*model 2*	*model 3*	*model 4*
All Japanese firms' affiliate count		0.566**	0.752**	0.877**
		(0.262)	(0.308)	(0.411)
All Japanese affiliate firms' count - squared		0.006	-0.025	-0.085
		(0.042)	(0.051)	(0.074)
Age of Japanese firms' affiliate count				0.261
				(0.257)
Similarly sized firms' affiliates count			0.190	0.273
			(0.193)	(0.220)
Age of similarly sized firms' affiliates count				-0.206
				(0.236)
Same industry segment affiliates count			0.401***	0.490***
			(0.144)	(0.174)
Age of same industry segment affiliates count				-0.133
				(0.160)
Same horizontal business group firms' affiliates count			0.046	0.134
			(0.166)	(0.272)
Age of same horizontal business group firms' affiliates count				-0.237
				(0.473)
High status firms' affiliates count			-0.511	-0.269
			(0.332)	(0.356)
Age of high status firms' affiliates count				-0.349
				(0.287)
Other electronics foreign affiliate count	0.296*	0.246*	0.386**	0.428**
	(0.153)	(0.140)	(0.171)	(0.195)
Other electronics foreign affiliate count - squared	-0.003	-0.005	-0.006	-0.006
	(0.006)	(0.010)	(0.010)	(0.009)
Vertical business group affiliate count	0.040	-0.081	-0.075	-0.061
	(0.215)	(0.207)	(0.220)	(0.218)
Province GDP	0.827***	0.587***	0.400*	0.261
	(0.220)	(0.205)	(0.226)	(0.262)
Province GDP per capita	2.027***	1.220**	1.024*	0.999*
	(0.461)	(0.498)	(0.536)	(0.600)
Province manufacturing wage	-0.345	-1.213	-1.351	-1.080
	(0.684)	(0.837)	(0.889)	(0.966)
Province has SEZ/OCC area (1982-1992)	0.530***	0.252	0.324*	0.374**
	(0.163)	(0.165)	(0.177)	(0.188)
Province has SEZ/OCC area (1993-2002)	0.300***	0.111	0.140	0.224**
	(0.100)	(0.103)	(0.100)	(0.098)
Province has seaport	-0.189	-0.149	-0.327	-0.350
	(0.248)	(0.248)	(0.306)	(0.308)
Past colonial ties with Japan	0.226	-0.382	-0.264	-0.103
	(0.362)	(0.412)	(0.449)	(0.482)
Observations	7150	7150	7150	7150
Loglikelihood	-525.80	-516.60	-509.91	-507.89
McFadden's Pseudo R-squared	0.37	0.39	0.39	0.40
Chi squared test	524.4***	600.3***	620.7***	736.4***
LR test (model 2 - model 1)		18,4***		
LR test (model 3 - model 2)			13.4**	
LR test (model 4 - model 3)				4.1

Notes: Error terms clustered by parent firm; Standard errors in parentheses; *, **, *** significant at 10%, 5%; 1%, respectively. Number of observations equals number of choosers times number of alternatives (regions) per choice.

Appendix: Descriptions of variables

Variable	Description	Hypothesis (sign)
Province choice	Dummy variable taking value 1 if a province/region is chosen to establish the manufacturing affiliate	
All Japanese firms' affiliate count	Logarithm of the count of all Japanese manufacturing affiliates in the broadly defined electronics sector in the Chinese province	H1 (+)
All Japanese affiliate firms' count - squared	Square of the Japanese affiliate count	H1b (-)
Age of Japanese firms' affiliate count	Logarithm of the average age of affiliates included in the all Japanese affiliate count at the time of establishment of the focal affiliate	
Similarly sized firms' affiliates count	Logarithm of the count of manufacturing affiliates established by similarly sized Japanese electronics firms in the province. Similar size is defined as parent firm employment in the same or adjacent sample decile.	H2 (+)
Age of similarly sized firms' affiliates count	Logarithm of the average age of affiliates included in the similarly sized firms' affiliate count at the time of establishment of the focal affiliate	H3 (-)
Same industry segment affiliates count	Logarithm of the count of manufacturing affiliates that operate in the same narrowly defined segment of the electronics industry in the province.	H2 (+)
Age of same industry segment affiliates count	Logarithm of the average age of affiliates included in the same industry segment affiliates count at the time of establishment of the focal affiliate	H3(-)
Same horizontal business group firms' affiliates count	Logarithm of the count of manufacturing affiliates established in the province by firms belonging to the same Japanese horizontal business group (keiretsu).	H2 (+)
Age of same horizontal business group firms' affiliates count	Logarithm of the average age of affiliates included in the same horizontal business group firms' affiliate count at the time of establishment of the focal affiliate	H3 (-)
High status firms' affiliates count	Logarithm of the count of manufacturing affilliates established in the province by the 16 Japanese electronics firms with the largest number of electronics affilaites in Asia	H2 (+)
Age of high status firms' affiliates count	Logarithm of the average age of affiliates included in the high status firms' affiliate count at the time of establishment of the focal affiliate	H3 (-)
Other electronics foreign affiliate count	Logarithm of the count of electronics manufacturing affiliates of non-Japanese foreign firms in the province	
Other electronics foreign affiliate count - squared	Square of the non-Japanese affiliate count	
Province GDP	Logarithm of gross domestic product (in hundred million Chinese Yuan) of the province.	
Province GDP per capita	Logarithm of gross domestic product per capita of the province (in hundred million Chinese Yuan).	
Province manufacturing wage	Logarithm of the average annual wage (in Chinese Yuan) of the province in the year of entry by the focal affiliate	
Province has SEZ/OCC area (1982-1992)	Dummy variable taking value 1 if the province hosts a Special Econoimc Zone or an Opening Coastal City; for entries in the years 1980-1991	
Province has SEZ/OCC area (1993-2001)	Dummy variable taking value 1 if the province hosts a Special Econoimc Zone or an Opening Coastal City; for entries in the years 1991-2001	
Province has seaport	Dummy variable taking value 1 if the province has a seaport	
Past colonial ties with Japan	Province has had previous colonial ties with Japan (Heilionjiang, Liaoning, Jilin)	

Note: all variables are measured the year before the entry of the focal firm

Figure 1: Count of Japanese Electronics Firms Entries in China